

Alcatel Solves Thermal Issues Early with FloTHERM

MECHANICAL ANALYSIS
Electronics Thermal

Design Challenge

The Alcatel 1678 Metro Core Connect (MCC), a new high speed optical networking switch, provides 640 Gb/s capacity in one shelf. This switch features high switching capacity and high-density interfaces within a very compact package. With power consumption running at levels of up to 2000 W per shelf and up to 140 W for each plug-in card, thermal management presented a major design challenge. The use of high speed optical transceivers and ASICs with restricted temperature ranges increased the difficulty of the design challenge.

Solution and Benefits

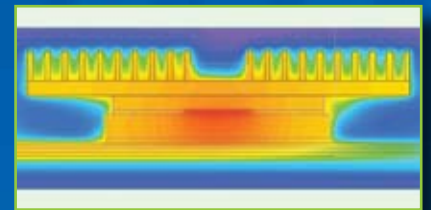
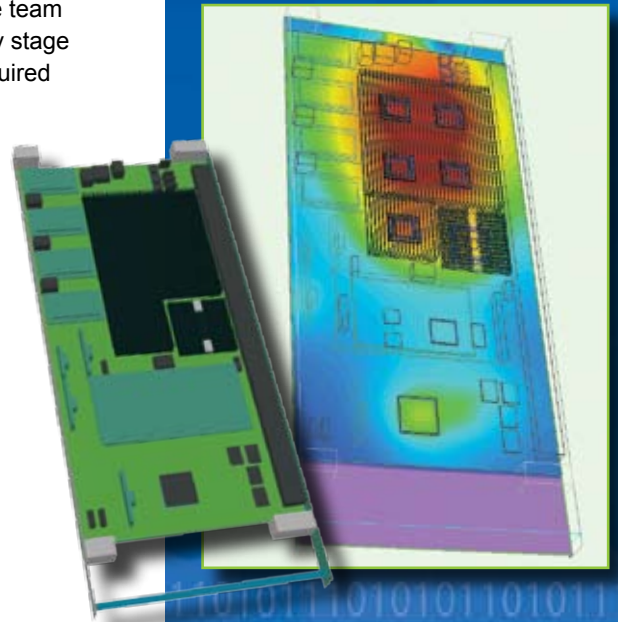
The project team recognized that it needed to address the cooling issues starting from the very beginning of the project. The team performed a shelf-level simulation with FloTHERM using air flow measurements to define environmental conditions. It built detailed and compact thermal simulation models of all relevant ASICs and of the optical transceivers using FloTHERM and FloTHERM^{Pack}. Some of these models were provided by component suppliers.

The analysis results were used by the project team to optimize the component placement, maximize the air flow to critical components and design highly efficient heat sinks for hot spot cooling. The team solved all thermal issues at an early stage of the design process when the required changes could be made easily and inexpensively.

Customer Testimonial

" We believe that it's critical to perform a careful thermal analysis at the beginning of every new design. We have successfully used FloTHERM software as our thermal simulation tool for many years. The combination of FloTHERM and FloTHERM^{Pack} enable us to quickly explore design variations and find the optimum solution at both the system and PCB levels. "

Pavel Valenta, Hardware Engineering,
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